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REC'D 23 SEP 2002

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference HARD1.007VPC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/31729	International filing date (day/month/year) 20 November 2000 (20.11.2000)	Priority date (day/month/year) 19 November 1999 (19.11.1999)
International Patent Classification (IPC) or national classification and IPC IPC(7): B32B 5/16 and US Cl.: 428/283		
Applicant JAMES HARDIE RESEARCH PTY LTD.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- CORRECTED
VERSION**
- I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 18 June 2001 (18.06.2001)	Date of completion of this report 21 February 2002 (21.02.2002)
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Cynthia H Kelly <i>B. Hender J</i> Telephone No. (703)308-2351

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/31729

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description:
 pages 1-6 _____ as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____
- ☒ the claims:
 pages NONE _____, as originally filed
 pages NONE _____, as amended (together with any statement) under Article 19
 pages NONE _____, filed with the demand
 pages 7 and 8 _____, filed with the letter of 19 December 2001
- ☒ the drawings:
 pages 1 _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages NONE _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/31729

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>4-9,13,16,17,23 and 25-27</u>	YES
	Claims <u>1-3,10-12,14,15,18-22 and 24</u>	NO
Inventive Step (IS)	Claims <u>4-8,16 and 17</u>	YES
	Claims <u>1-3,9-15 and 18-27</u>	NO
Industrial Applicability (IA)	Claims <u>1-27</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-3, 10-12, 14, 15, 18-22 and 24 lack novelty under PCT Article 33(2) as being anticipated by United States Publication No. 5,425,986 (Guyette).

Guyette discloses a structure having a core comprised of fiber cementboard laminated to both of its surfaces where at least one sheet of fibrous material is paper, where the method of manufacturing this structure is taught (see column 1, lines 49-63). Guyette discloses the use of cellulosic fibers (see column 2, line 45) and the fiber cementboard containing an adhesive layer disposed thereon (see column 4, lines 8-10). Guyette discloses pressure to which the assembly is subjected are from about 500 to about 2,500 psi or more at temperatures of 100 degrees to 250 degrees at varying times (see column 7, lines 27-46).

Claims 1-3,9-15 and 18-27 lack an inventive step as being obvious over 5,425,986 (Guyette).

Guyette does not explain that the polymeric film has a glass transition temperature between 90 and 50 degrees celcius. However the glass transition temperature range would be expected to be in the same range as applicant claims since the same polymers are being used. Guyette also does not explicitly show the layer structure of the specific resin papers. However this is an obvious variation that one of ordinary skill would understand. The reference states that the layers are present and can be layered as necessary for the intended purpose. The method steps, although not specifically disclosed are conventional and also well known in the art.

Claims 4-8, 16, and 17 meet requirement for novelty under PCT article 33(2) and (3) as Guyette does not show that the polymers have elastomeric properties.

Claims 1-27 meet requirements under PCT article 33(4) for industrial applicabilities as the invention is used for a building material.

WHAT IS CLAIMED IS:

1. A building material, comprising:
a fiber cement substrate having a first side and a second side;
at least one resin impregnated paper over at least one of said first and second sides; and
5 an elastomeric film between said fiber cement substrate and said at least one resin
impregnated paper, said elastomeric film acting as a stress relaxer between said fiber cement
substrate and said at least one resin impregnated paper.
2. The building material of Claim 1, wherein the fiber cement substrate comprises cellulose
fibers.
- 10 3. The building material of Claim 1, wherein the elastomeric film is selected from the group
consisting of polyurethane, acrylic, acrylic-styrene, polyester, polyether, polyvinyl and their modified films,
epoxy, polyamide, polyimide, polysulfide, silicon based polymer and natural polymers.
4. The building material of Claim 1, wherein the elastomeric film has an elongation between
about 20% and 1200%.
- 15 5. The building material of Claim 4, wherein the elastomeric film has an elongation between
about 100% and 1000%.
6. The building material of Claim 1, wherein the elastomeric film has a modulus of elasticity at
100% elongation of between about 10 and 10,000 psi.
7. The building material of Claim 6, wherein the elastomeric film has a modulus of elasticity at
20 100% elongation of between about 50 and 8,000 psi.
8. The building material of Claim 1, wherein the elastomeric film has a glass transition
temperature between about -90 and 50°C.
9. The building material of Claim 1, further comprising an adhesive on a surface of the
elastomeric film.
- 25 10. The building material of Claim 1, wherein the resin impregnated paper includes a cellulose
paper penetrated with resin selected from the group consisting of melamine-formaldehyde and phenol-
formaldehyde.
11. The building material of Claim 1, wherein a resin impregnated paper is laminated to both
said first and second sides.
- 30 12. The building material of Claim 1, comprising at least one layer of phenol-formaldehyde
penetrated paper over the first side of the fiber cement substrate, and at least one layer of melamine-
formaldehyde penetrated paper over the at least one layer of phenol-formaldehyde penetrated paper.
13. A film for joining fiber cement to a resin penetrated paper, comprising an elastomeric
polymer adapted to balance stresses between the fiber cement and the resin penetrated paper.

14. The film of Claim 13, wherein the polymer is selected from the group consisting of polyurethane, acrylic, acrylic-styrene, polyester, polyether, polyvinyl and their modified films, epoxy, polyamide, polyimide, polysulfide, silicon based polymer and natural polymers.
- 5 15. The film of Claim 13, wherein the polymer is a water based polyurethane elastomeric adhesive.
16. The film of Claim 13, wherein the polymer is a water based acrylic elastomeric adhesive.
17. A method for bonding a fiber cement substrate having a surface to at least one resin impregnated paper to form a building material, the method comprising:
- 10 coating at least a portion of the surface of the fiber cement substrate with an elastomeric film, the elastomeric film being capable of preventing delamination within, as well as between the substrate and the at least one resin impregnated paper; and
- pressing at least one resin impregnated paper against the elastomeric film and the substrate.
18. The method of Claim 17, wherein the fiber cement has a thickness of about 0.25 inches.
- 15 19. The method of Claim 17, wherein the at least one resin impregnated paper includes a plurality of resin impregnated papers.
20. The method of Claim 19, further comprising forming a pre-cured resin impregnated paper laminate by pressing the plurality of papers together in a separate process from and prior to pressing the pre-cured resin impregnated paper laminate against the elastomeric film and the substrate .
- 20 21. The method of Claim 20, wherein the pre-cured resin impregnated paper laminate has a thickness of between about 0.5 mm to 3 mm.
22. The method of Claim 20, wherein pressing the plurality of papers together takes place at about 350°F for about 1 minute at a pressure of about 50 psi.
23. The method of Claim 17, wherein pressing occurs at about 350°F for about 5 minutes at a pressure of about 750 psi.
- 25 24. The method of Claim 17, further comprising smoothening the surface of fiber cement prior to coating.